

DOES *PLASMODIUM* SIGNAL WITH G PROTEIN-COUPLED RECEPTORS? SEARCHING MOLECULAR MECHANISMS TO SENSE THE ENVIRONMENT.

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Plasmodium communicates with the environment and responds to them. Melatonin is known as a hormone that regulates the circadian rhythm of several vertebrates. We have previously shown that melatonin and other products of tryptophan catabolism (i.e., serotonin, N-acetylserotonin and tryptophan itself) are able to synchronize malaria parasites during their intraerythrocytic development, a process which is PLC dependent. Moreover, we observed that calcium, an ubiquitous second messenger, rises in the cytosol of these parasites as a result of melatonin addition. Here we show that N-acetyl-n-formyl-5-methoxykynuramine (AFMK), a product of melatonin degradation evokes cytosolic calcium rise and synchronizes the parasite (Budu et al, in press).. The question we asked ourselves is :How *Plasmodium* senses the environment ? Serpentine receptors exert their effect through cell signaling. They are present in evolutionary distant organisms such as bacteria, fungi, plants and metazoans, However, up to the moment, their existence in malaria parasites are largely unexplored. We are currently testing four serpentine receptors in malaria parasites as constitute novel members of the largest class of membrane receptors widespread in living organisms more generally called serpentine or heptahelical receptors. Finally, we are also investigating for transcript level changes after *Plasmodium falciparum* parasites exposition to melatonin in culture. Parasites (18h after synchronization) were incubated for 12 hours with melatonin or control and RNA extracted. These samples were submitted to real time analysis. Our data showsthat the transcript levels changes after either the 6 or 12 hours incubation..